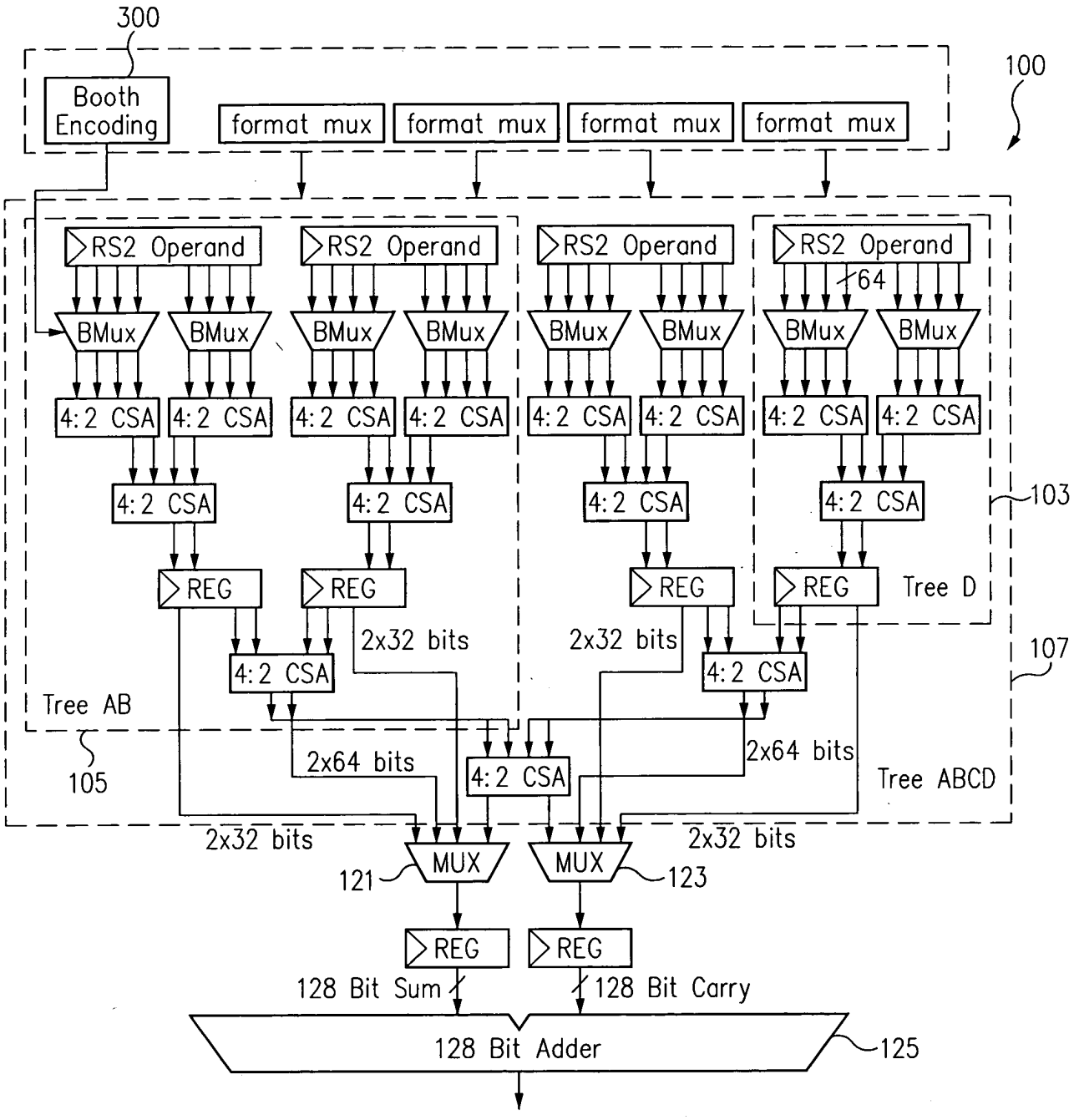


FIG. 1

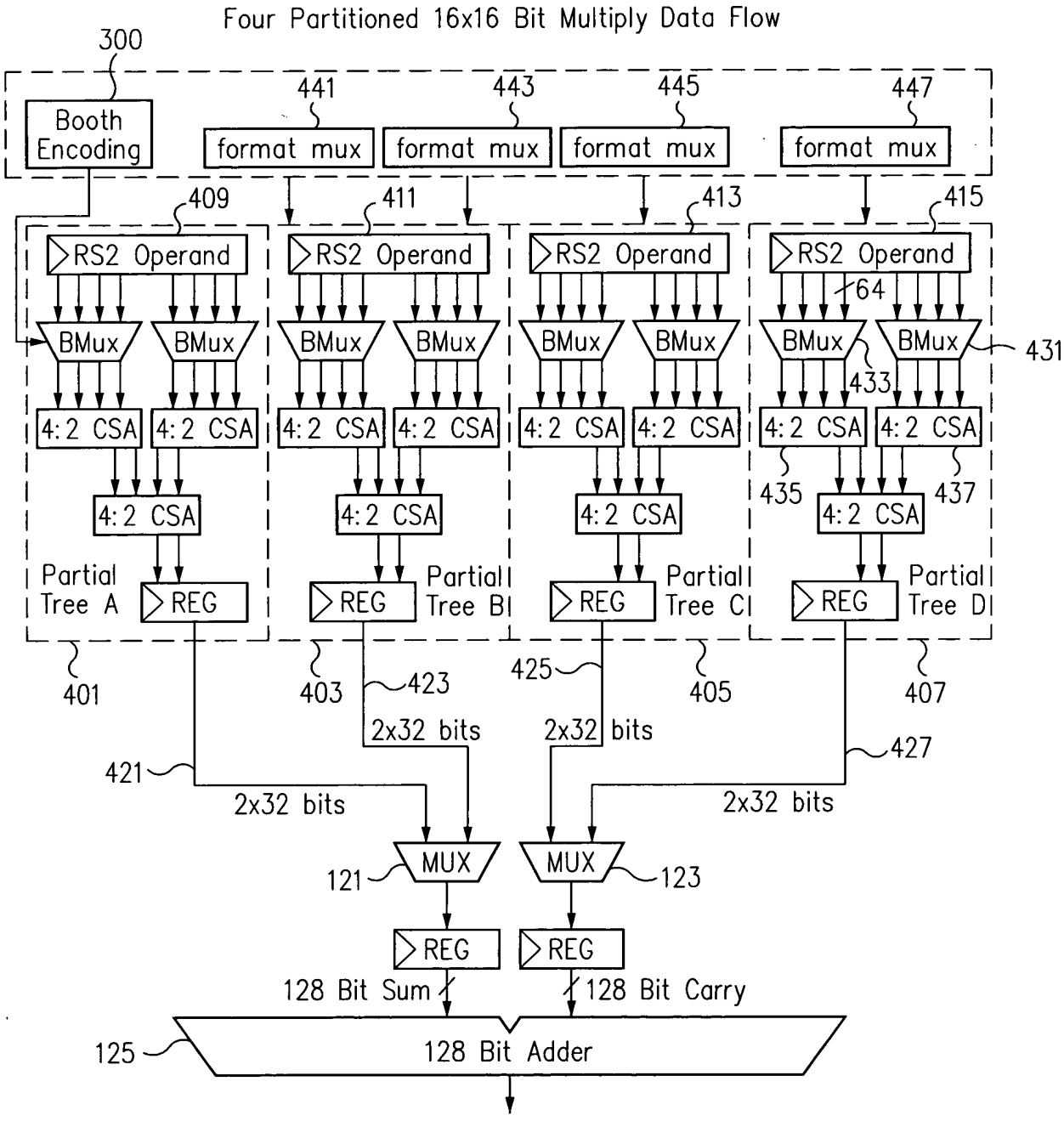

Four Partitioned 16x16 Bit Multiply Data Flow
300
Booth Encoding
441
443
445
447
format mux
format mux
format mux
format mux
409
411
413
415
RS2 Operand
RS2 Operand
RS2 Operand
RS2 Operand
64
BMux
431
433
4:2 CSA
435
437
Partial Tree A
Partial Tree B
Partial Tree C
Partial Tree D
REG
401
403
423
425
405
407
2x32 bits
421
427
MUX
121
123
128 Bit Sum
128 Bit Carry
125
128 Bit Adder

FIG. 4

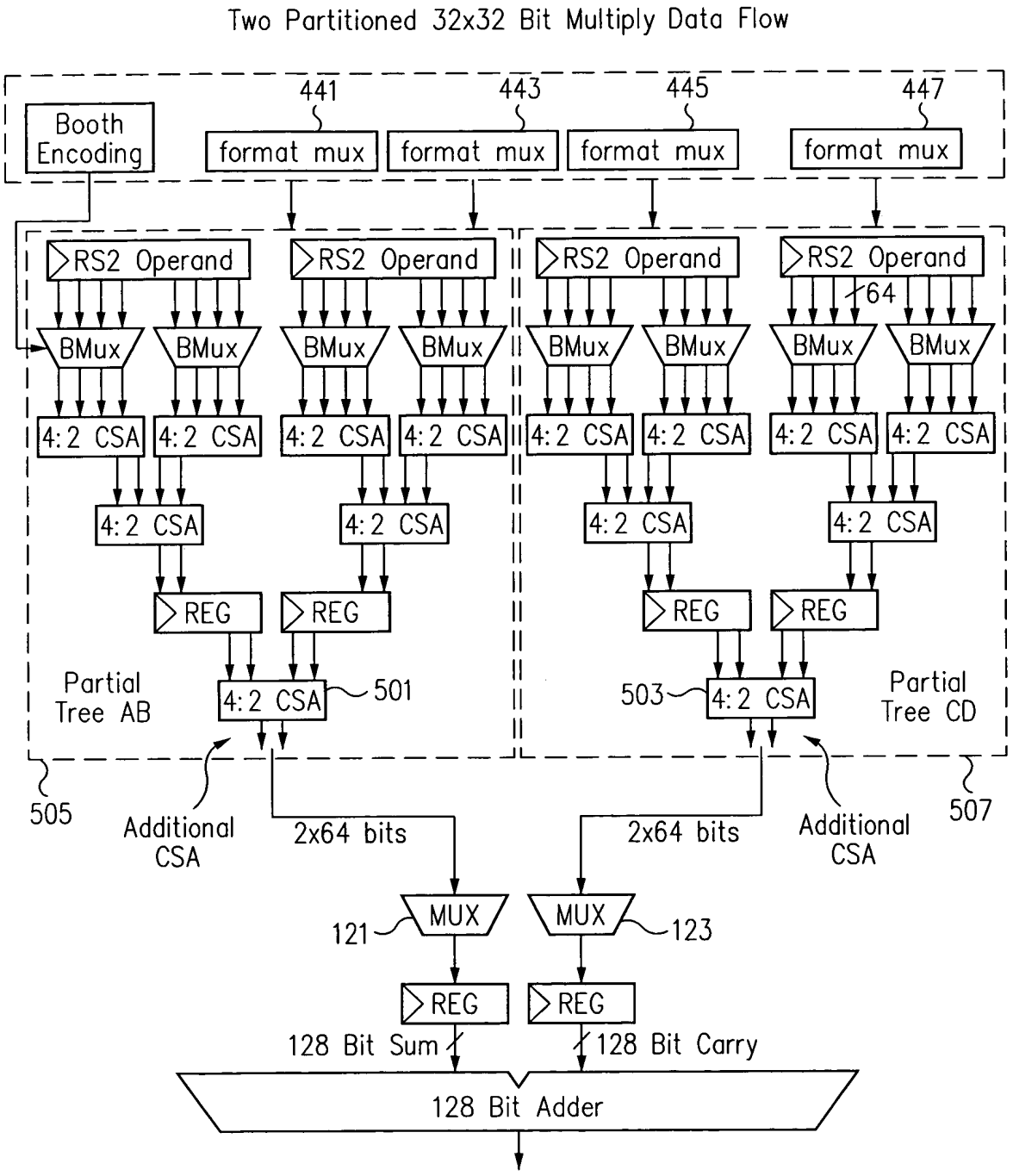

Two Partitioned 32x32 Bit Multiply Data Flow
Booth Encoding
441
443
445
447
format mux
format mux
format mux
format mux
RS2 Operand
RS2 Operand
RS2 Operand
RS2 Operand
64
BMux
4:2 CSA
REG
Partial Tree AB
Partial Tree CD
501
503
505
507
Additional CSA
Additional CSA
2x64 bits
2x64 bits
MUX
121
123
128 Bit Sum
128 Bit Carry
128 Bit Adder

FIG. 5

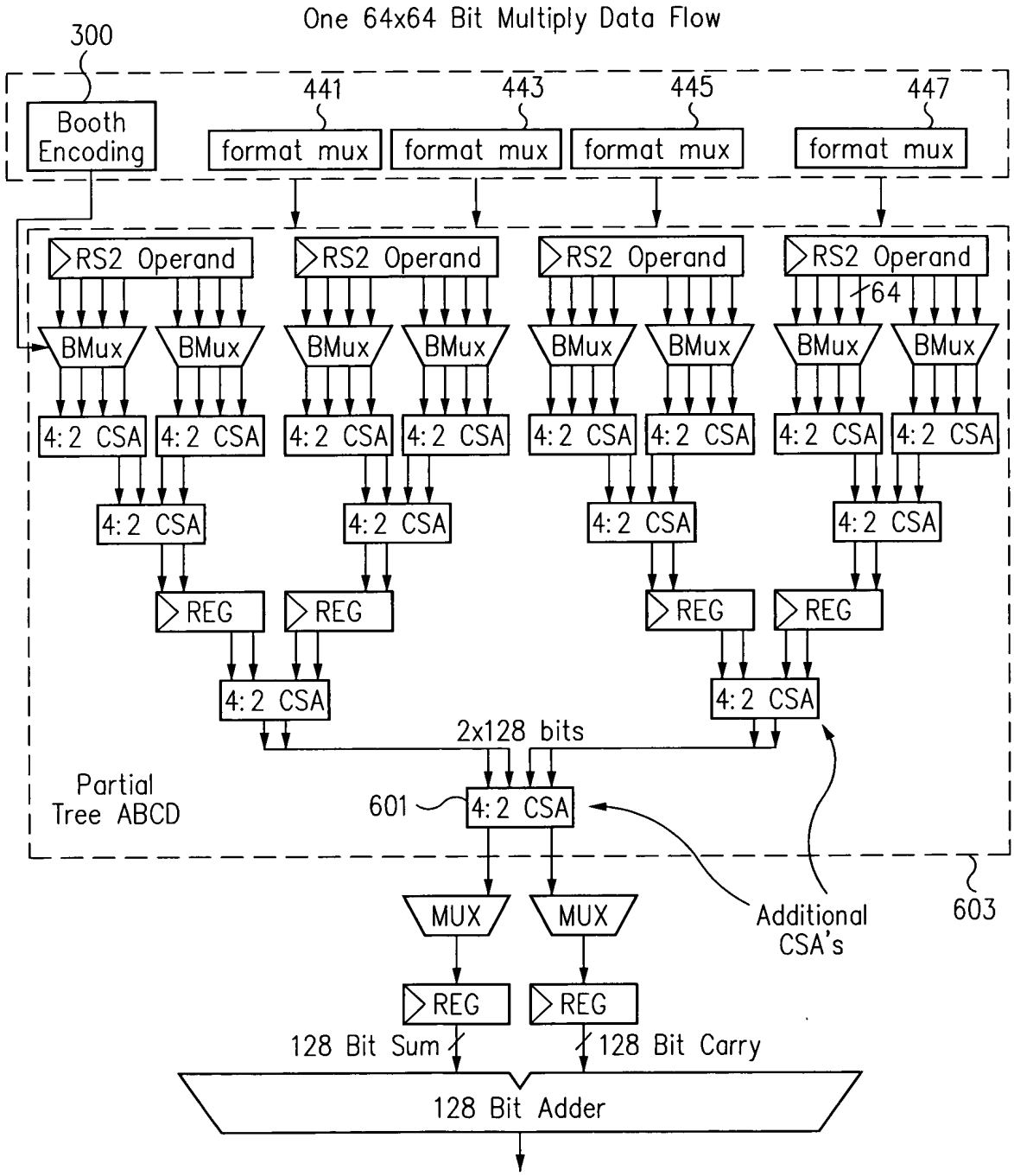

One 64x64 Bit Multiply Data Flow
300
Booth Encoding
441
443
445
447
format mux
format mux
format mux
format mux
RS2 Operand
RS2 Operand
RS2 Operand
RS2 Operand
64
BMux
4:2 CSA
REG
2x128 bits
Partial Tree ABCD
601
603
Additional CSA's
MUX
128 Bit Sum
128 Bit Carry
128 Bit Adder

FIG. 6

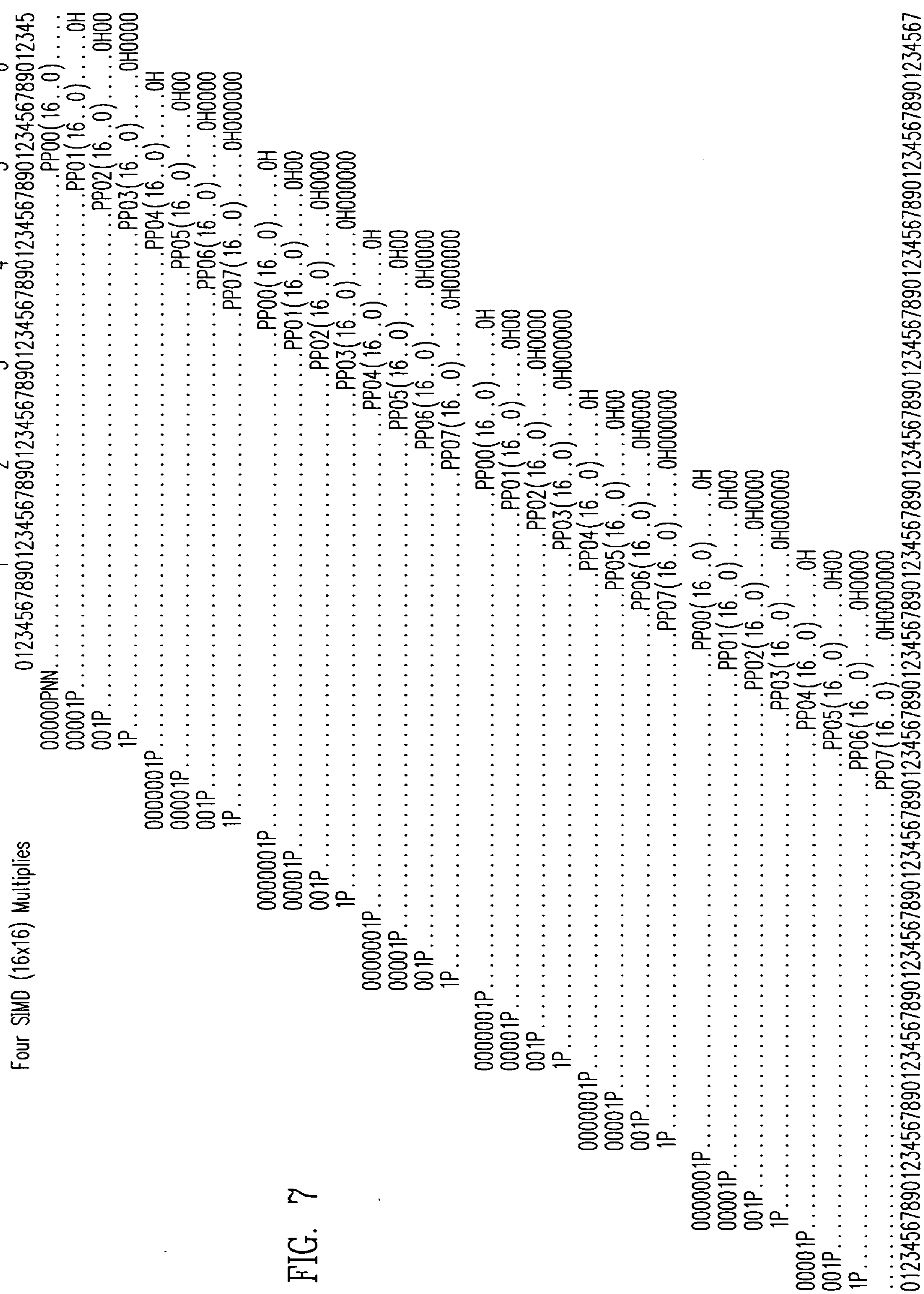


FIG. 7

FIG. 8

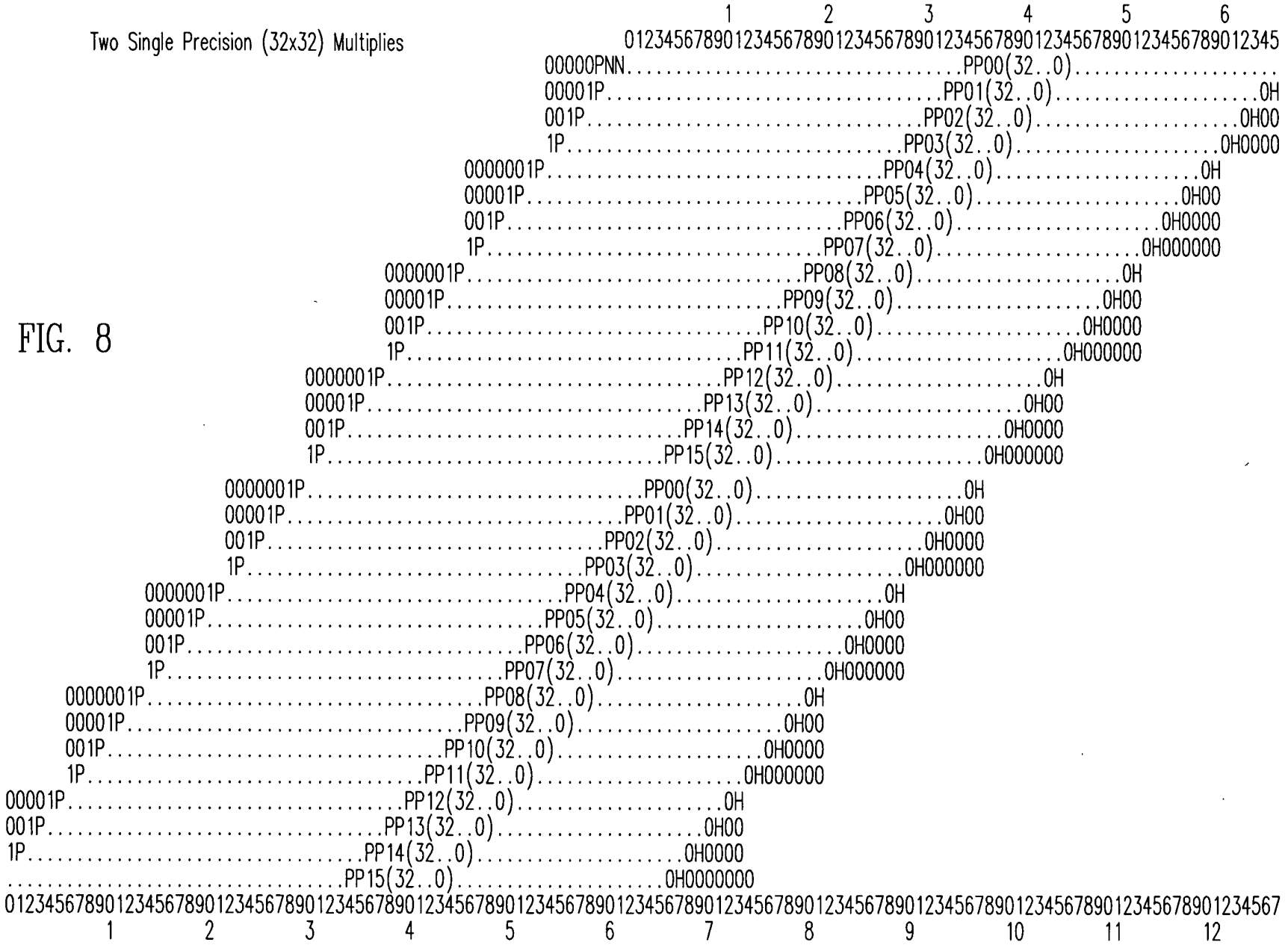
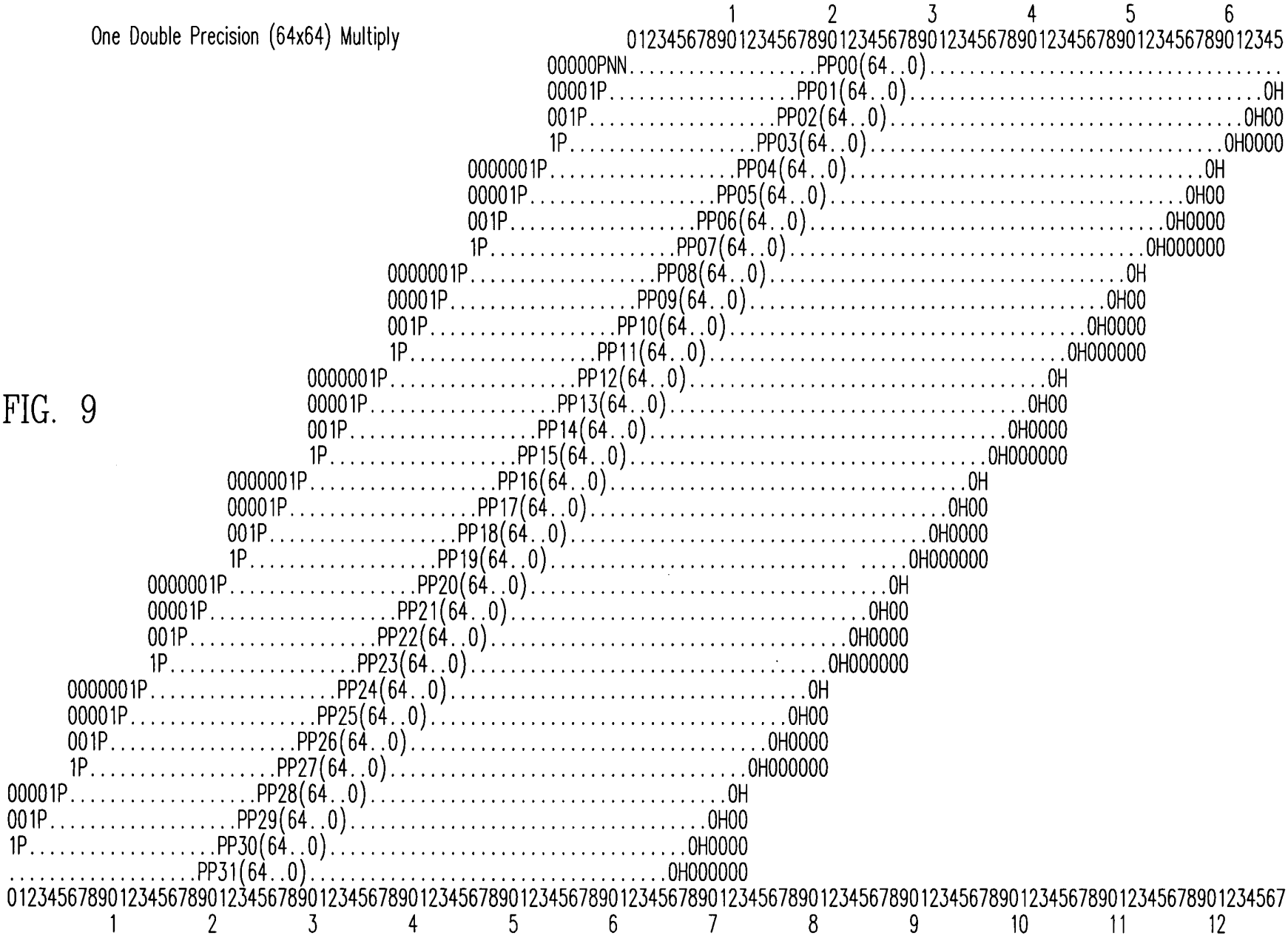

Two Single Precision (32x32) Multiplies
00000PNN
00001P
001P
1P
0000001P
00001P
001P
1P
0000001P
00001P
001P
1P
0000001P
00001P
001P
1P
0000001P
00001P
001P
1P
0000001P
00001P
001P
1P
0000001P
00001P
001P
1P
00001P
001P
1P
PP00(32..0)
PP01(32..0)
PP02(32..0)
PP03(32..0)
PP04(32..0)
PP05(32..0)
PP06(32..0)
PP07(32..0)
PP08(32..0)
PP09(32..0)
PP10(32..0)
PP11(32..0)
PP12(32..0)
PP13(32..0)
PP14(32..0)
PP15(32..0)
0H
0H00
0H0000
0H000000
0H0000000
1 2 3 4 5 6
1 2 3 4 5 6 7 8 9 10 11 12

FIG. 9


One Double Precision (64x64) Multiply
00000PNN.....PP00(64..0)
00001P.....PP01(64..0).....0H
001P.....PP02(64..0).....0H00
1P.....PP03(64..0).....0H0000
0000001P.....PP04(64..0).....0H
00001P.....PP05(64..0).....0H00
001P.....PP06(64..0).....0H0000
1P.....PP07(64..0).....0H000000
0000001P.....PP08(64..0).....0H
00001P.....PP09(64..0).....0H00
001P.....PP10(64..0).....0H0000
1P.....PP11(64..0).....0H000000
0000001P.....PP12(64..0).....0H
00001P.....PP13(64..0).....0H00
001P.....PP14(64..0).....0H0000
1P.....PP15(64..0).....0H000000
0000001P.....PP16(64..0).....0H
00001P.....PP17(64..0).....0H00
001P.....PP18(64..0).....0H0000
1P.....PP19(64..0).....0H000000
0000001P.....PP20(64..0).....0H
00001P.....PP21(64..0).....0H00
001P.....PP22(64..0).....0H0000
1P.....PP23(64..0).....0H000000
0000001P.....PP24(64..0).....0H
00001P.....PP25(64..0).....0H00
001P.....PP26(64..0).....0H0000
1P.....PP27(64..0).....0H000000
00001P.....PP28(64..0).....0H
001P.....PP29(64..0).....0H00
1P.....PP30(64..0).....0H0000
.....PP31(64..0).....0H000000
01234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567
1 2 3 4 5 6 7 8 9 10 11 12

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